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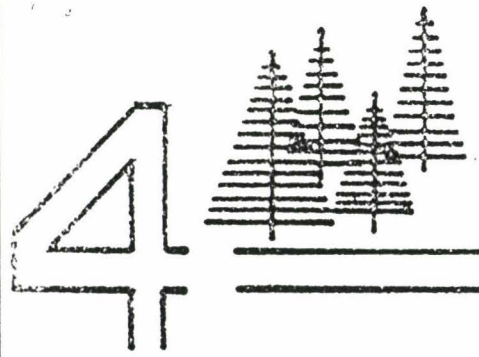

FOREST PEST MANAGEMENT

STATE & PRIVATE FORESTRY

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AN EVALUATION OF PROPOSED DWARF MISTLETOE CONTROL PROJECTS, KEMMERER RANGER DISTRICT, BRIDGER-TETON NATIONAL FOREST June 22-24, 1983

By
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INTRODUCTION

On June 22-24, 1983, Plant Pathologist LaGrande Hobbs and Biological Technicians Ann Keysor, John Anhold, and Faerthen Felix evaluated proposed areas for dwarf mistletoe (DM) control measures in lodgepole pine (LPP) stands on the Kemmerer Ranger District. Two major areas were evaluated: (1) LaBarge Creek Burn and (2) Deadline Timber Sale. Within each of these major areas, there are several subunits varying in DM infection levels, stand composition, area, and average size of regeneration. These variations will have an effect on control measures to be recommended. Individual subunits or groups of like subunits will be treated separately, along with some general recommendations on which units should have priority for treatment.

I. LaBARGE CREEK BURN

In this area, 1/300-acre plots were established in two stands, and a walk-through evaluation was made in a third stand. All were similar in that the regeneration is quite advanced, and DM infection is low and spotty. In this discussion, the stands will be treated separately.

STAND 1 - In this stand of about 15 acres, 30 - 1/300-acre temporary plots were established.

It was found that there are 330 LPP understory trees per acre, averaging 22 feet tall and 4.2 inches DBH. Age of the stand is about 26 years, and growth is good with a site index (base age of 100 years) of 92. The stand has just recently been thinned so that many DM-infected trees have been removed. There is an infection level of about 15 percent, or 10 trees per acre. The average infection class (Hawksworth 6-point scale) is 1.5. There are 10 infected overstory trees per acre.

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EXPERIMENT STATION

Recommendation - Since this stand is only 22 feet high and only lightly infected due to the removal of infected trees through the thinning process carried out recently, only minor work needs to be done in order to reduce further spread of DM in the stand to an acceptable level. The few overstory trees left can be girdled, thus reducing the greatest potential for spread of DM. Seeds can be shot out over a stand for up to 50 feet from an overstory tree, but, within a uniform stand, spread is only about 1 to 1½ feet per year.

STAND 2 - In this stand of about 26 acres, 33 - 1/300-acre temporary plots were established. There are 300 LPP understory trees per acre that average 24 feet tall and have a DBH of 6.2 inches. The understory age is about 27 years, and good growth is occurring. No site index was taken, but it is probably very close to Stand 1. The DM infection level in the understory is about 15 percent with an average DM rating of 2.

Based on the survey data, there are about 36 infested overstory trees per acre. However, all four overstory trees that occurred were found clustered on one plot, so the estimate of 36 trees per acre is probably too high. Based on an overall estimation of the stand, an estimate of 10 trees per acre is probably more accurate.

Recommendations - Same as those for Stand 1.

STAND 3 - Plots were not taken in Stand 3. A walk-through was made, and no DM infection was found out in the middle of the stand. There is some infection in the regeneration on the edge of the stand near the road. Most of the remaining infected overstory trees are also located along the edge, by the road. The area of this stand is about 26 acres.

Recommendations - Girdle or fell the infected overstory trees and the few infected trees in the understory along the road. This should effectively reduce the DM to a very low level in the stand.

II. DEADLINE TIMBER SALE

The Deadline Timber Sale consists of a number of smaller clear-cut units located in several drainages. Eighteen of these cutting units were evaluated in preparation for DM control work. The evaluation was made by walking around the perimeter of the units, as well as observing the unit as a whole. Old DM-infected LPP on the perimeters was noted, as well as any residual LPP overstory in the units. The regeneration was also inspected in order to detect any DM infection that may have occurred.

All of the units visited have old infected LPP on the edges, but, in most cases, there is also a good mixture of subalpine fir (SAF), Engelmann spruce (ES), Douglas-fir (DF), and/or limber pine (LP), along with the LPP. These other species are not hosts for LPP dwarf mistletoe. Some units have scattered, infected, residual LPP out in the unit. Others were found to be clean clear-cuts.

Height of the regeneration varies from unit to unit. It has been found that the taller the regeneration, the more likely it is to become infected by DM. At this time, there is little or no infection observable in the regeneration.

Following is an evaluation of individual units or groups of units with the same characteristics:

UNIT 32 - This is a relatively large unit of about 33 acres with DM-infected LPP bordering the cut-over area and scattered infected whips inside the unit. There are also two islands of leave trees in the unit near the center. DM brooms were found in most of the LPP trees in the smaller island toward the south side of the unit. The larger island just to the north of the small one does not appear to have many infected trees. In both of the islands, there is a mixture of SAF.

Regeneration is about 4 feet tall and does not appear to have DM infections. Trees this small are probably covered with snow, which tends to pull DM seeds off the tree as it slips off the branches. This may explain the lack of infection.

Recommendations - It is strongly recommended that the scattered residual overstory be girdled or cut, as well as all LPP in the smaller island in this unit. The larger island can probably be left intact, but there is some danger of leaving infected trees. Any SAF trees can be left, as they will not be infected by DM. Leaving them will help alleviate adverse effects of a large clear-cut and help reduce spread of DM seeds.

The infected LPP trees along the edge can be cut or girdled to 40 feet from the edge of the clear-cut, taking care to leave all SAF as a barrier to infection of the LPP regeneration. Along much of the border, there is not much SAF. In these areas, the result of cutting the LPP would be to simply enlarge the clear-cut. Fortunately, this unit is large enough so that the impact of infection from those edges where there is no SAF will not be great in relation to the total unit. Infection from the edges can be expected to spread initially about 50 feet into the stand, then at a rate of about 1 to 1½ feet per year in the stand. Over a rotation, the DM would only spread about 120 feet into the stand, and the trees infected late in the rotation would probably not suffer significant growth loss.

UNIT 33 - This unit is very similar to Unit 32 except there is no residual overstory or islands of LPP in the unit, and it is smaller consisting of about 10 acres. The edge characteristics are the same as Unit 32. Regeneration is a little taller at an average of 5-6 feet.

Recommendations - Infected LPP should be removed from the edges of this unit back about 40 feet. On much of the edge there is not sufficient SAF to form a good barrier to DM spread. Care must, therefore, be taken to leave all SAF as an aid to slowing spread into the unit.

UNIT 34 - This is a small (about 4 acres), narrow unit with a rather irregular border. It is a clean clear-cut containing no residual overstory. There is a good mixture of SAF along the northwest edge, with less fir along the southeast border. Regeneration is 6-7 feet tall with essentially no infection as yet.

Recommendations - Since this unit is so small and narrow, it is very prone to total infection of the regeneration at an early age, so control work is well justified. All old LPP should be cut or girdled in a strip 30 feet wide into

the adjacent stand along the northwest border, where there is a good mixture of SAF, and 40 feet on the southeast edge. All fir should be left as a barrier to DM spread into the unit. Control measures should be initiated soon, since the 6 to 7-foot regeneration is tall enough to remain above the snow and become infected.

UNIT 35 - This is a relatively small, 3.3-acre unit with regeneration 5-6 feet tall. There is infection in the surrounding LPP stands but no residual trees left in the unit. There is an old tie-hack area on the northwest end, with trees 10-20 feet tall. Very few of the trees in the tie-hack area are infected by DM.

Recommendations - Girdle or cut all LPP back to 40 feet in the surrounding stands, leaving fir as a buffer against infection of the regeneration. If thinning is to be done in the regeneration, the taller material in the old tie-hack area could be thinned also, removing all infected trees and girdling the overstory.

UNIT 36 - Regeneration in this unit is about 4 feet tall. The unit is surrounded by DM-infected LPP and has islands of infected LPP in the cut-over area. Size is about 8.3 acres. There is an old tie-hack area on the east end of the unit, with residual overstory and advanced regeneration. The regeneration in this area is almost totally infected by DM. There is a road through the tie-hack area.

Recommendations - Since this is a relatively small, narrow unit, control measures are important to protect it from DM infection. All LPP along the edges should be cut or girdled back to 40 feet into the surrounding stand, leaving the SAF as a buffer. All LPP in the islands should be cut or girdled also. The SAF in these islands can be left or cut, whichever is best for the management of the area. All trees, both overstory and regeneration, in the tie-hack area should be cut or girdled back to the road, so the road can serve as a buffer strip.

UNIT 37 - This unit is a narrow, clean clear-cut about 250 feet across, consisting of about 8 acres. There is a mixture of SAF and infected LPP around the unit. The regeneration averages about 3 feet tall.

Recommendations - Girdle or fell LPP in the surrounding stands back to 50 feet, leaving all SAF as a buffer. Since regeneration is relatively short, this area can go for a year or two before this is accomplished.

UNIT 38 - This is a small, clean clear-cut with scattered, short regeneration and infected LPP bordering it. The area is about 4 acres.

Recommendations - Since regeneration is limited, a control project is probably not justified at this time. Should the unit be replanted, or more natural regeneration come in, the LPP along the edge should be girdled or cut back to 40 feet and the SAF left as a barrier to DM spread.

UNIT 39 - This is a very small, 2-acre, clean clear-cut surrounded by a mixture of SAF and infected LPP. Regeneration is good.

Recommendations - Control measures may not be justified, since the effort may be greater than the value of the small area to be protected. In planning future cutting in units where DM is a problem, the units should be much larger than this one.

UNITS 45 and 46 - These two units are side by side, forming a large, almost-square opening of about 44 acres which is essentially uniform. There is scattered DM-infected overstory and regeneration about 7-8 feet tall, which is essentially uninfected at this time. There is a good mixture of SAF in the regeneration. There is an old tie-hack to the west of Unit 45 with regeneration 10 to 20 feet tall. The cutting unit is separated from this area by a road. The rest of the unit is bordered by a mixture of spruce, fir, Douglas-fir, and infected LPP. On the upper edge, LPP makes up about 50 percent of the total number of trees. On the lower edge, there are more non-host trees than LPP.

Recommendations - The infected overstory in the units definitely needs to be removed or girdled. These are high priority units, since the regeneration is tall and very likely is becoming infected now. Also, the LPP bordering the units should be girdled or cut back to 30 feet, leaving non-host trees as a barrier to seed spread. This will be easy along the lower edge, since there is not much LPP there. There is not much infection in the older cut-over area on the west, so there is no need to remove those trees. The road will serve as a buffer against spread of DM, and the trees are not tall enough to act as overstory.

If a thinning operation is carried out, care should be taken to remove all DM-infected LPP and also to leave a good mixture of non-host fir and spruce to slow spread of any DM in the stand.

UNITS 47, 48, 49, 50, 52, 55, and 62 - There is not enough regeneration in these units to warrant control efforts. They may need to be done in the future.

UNIT 56 - This is a clean clear-cut with 3- to 4-feet regeneration. The area is about 10 acres. The border has a good mixture of spruce, fir, limber pine, and Douglas-fir, with some DM-infected LPP, except along part of the northern edge where there is an old tie-hack area with 15 to 20-foot regeneration and some residual DM-infected overstory.

Recommendations - Cut or girdle all old LPP along the border back 30 feet into the surrounding stands. Leave non-host trees as a buffer. In the tie-hack area in addition to removing the overstory, the regeneration should be carefully inspected for DM infections and all infected trees removed. Once again, leave any non-host trees for a buffer. This unit should be easy to protect, since only a few LPP trees need to be removed.

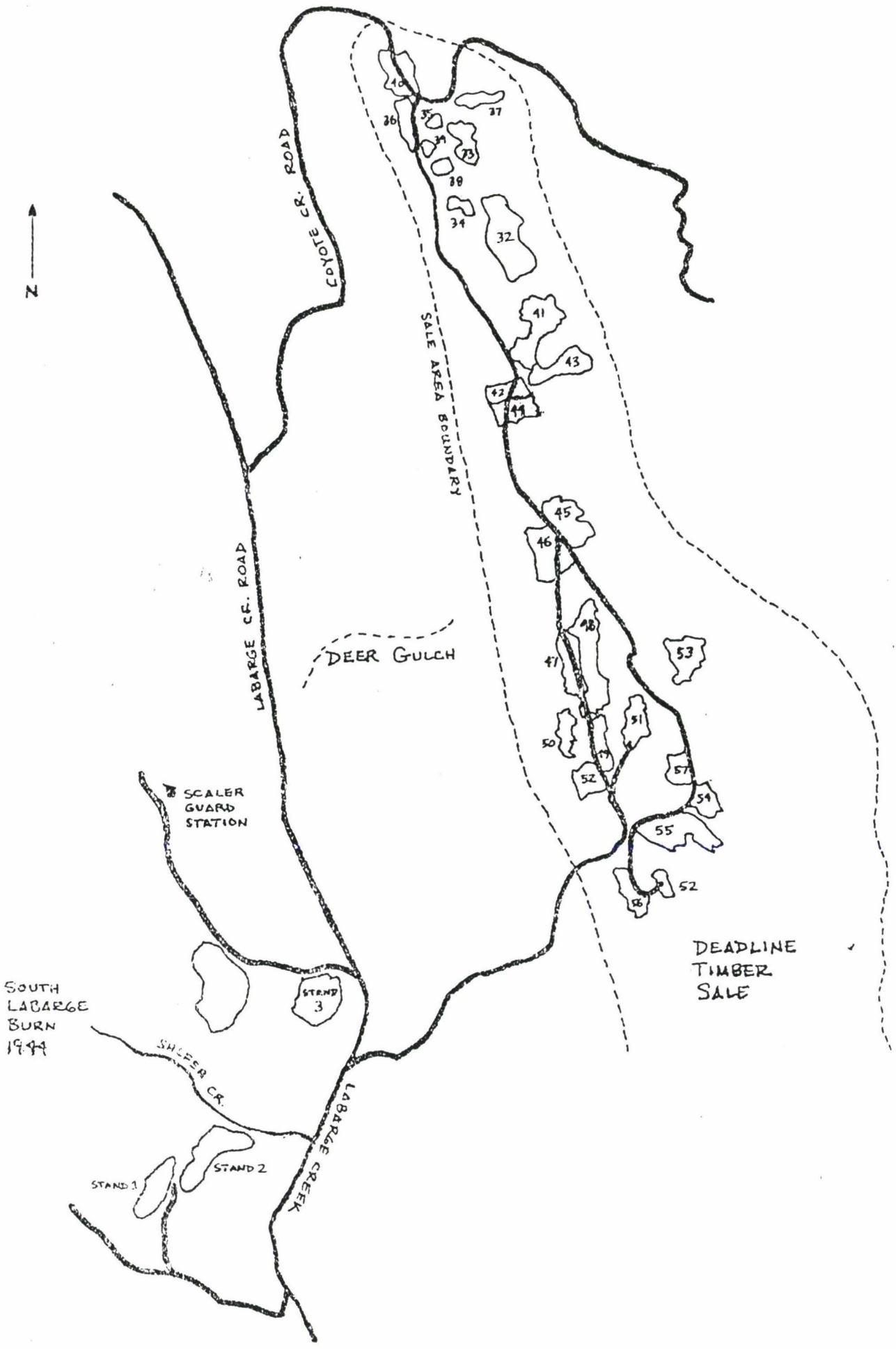
GENERAL RECOMMENDATIONS

The work on the LaBarge Creek Burn should probably be done first, since only a small amount of effort is needed and the regeneration is tall. This work is apparently funded for this year.

In the Deadline Timber Sale, Units 45 and 46 should have priority due to the height of the regeneration, followed in order by units: 34, 35, 32, 36, 56, 33 (if it is to be done), 37, 38, and 39.

These units may be worked over a period of 2 or 3 years, since some of the regeneration is still rather short.

In planning future timber sales in areas where DM is a factor, it should be kept in mind that cutting units should be 20 acres or more in size in order to keep the area-to-edge ratio high enough to reduce the percentage of the area subject to reinfection from the edges. This is true where no natural barriers are present, such as non-host stands, streams, rock-out croppings, etc. Most of these cutting units are below that 20-acre minimum.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LABARGE CREEK
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STAND 2
STAND 3
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